AASC 2002 Annual Meeting at Asheville, NC
Implementing a Climate Services Partnership

Registration and Ice-breaker was held in one of the meeting rooms of the Renaissance Hotel.

The morning of the first meeting day focused on partnerships.

Welcomes were offered by president Jay Grymes (LA) and host state (NC) state climatologist Sethu Raman. Self-intros went around the room.

Dr. Sharon Leduc (NCDC, Deputy director) talked about 'A vision for a Climate Services Partnership'. Under the banner of 'SC vision/issues' she mentioned 50-55 offices, 10-15 allied university professors, a need to highlight common mission, Federal-state matches, that the climate services mission is predominant – users want somebody to talk to - not just a web page, the SC functions are need-driven/research-driven/other?, and mesonet archival by state perhaps with NCDC assistance. Under RCC 'visions/issues' she highlighted 50% for a NOAA Climate Services unit and 50% for university-based centers for … grant supported research, RCCs are the premier climate services organizations, comprehensive all-source data bases are maintained near-real-time and accessible 24/7/365, and network distributed climate information (NCDI). Under 'National' she talked about CCRI/GCRP driving Climate Office creation, planning to have grater emphasis, CRN will stabilize data questions – sites will be stable for 50-100 years, remote sensing and GIS will be important tools, reanalyses are undertaken, a dataset vision of paleo to near-real-time, and modelers are in demand but the need for observations is critical. On 'significant tech/data trends' she highlighted 'non-wire', that every SC should have state of the art computer with modern graphics and communications, that NCDC storage will need to deal with up to 200 TB/day (NEXRAD, satellites), and a widening gap in computer literacy. About 'organizational trends' she mentioned the desire for active SC members in all 50 states and 3-5 territorial climate offices, AASC's role in deciding ARSCO status if SCs, a desire to more closely match RCCs to NWS areas, and NCDC changes. As for 'RCC/NCDC evolutions' she mentioned that applied climatology research grants will continue and that climate services contracts will be tuned by performance measures, that the ARSCO/RCC research and exchange program will be continued, and that the CDMP will continue its 'data rescue'. As partners we will provide accurate, comprehensive, timely, and appropriated scaled data and information to all clients from local to national scales. For a 10-year vision she offered that NCDC is the core home for climate data while the SCO/ARSCO will remain the state focal points, especially for state governments and that the RCCs will integrate to regional levels. Pat Michaels (VA) asked what specific legislation should we be watching but no strong focus was offered. Jim O'Brien (FL) commented that the NOAA products brochure was misleading. Miscellaneous other comments were offered.

A panel addressed the topic of 'Implementing the Climate Services Partnership: Partner perspectives'.

Mike Helfert (NCDC) talked about 'Visions of Resources and Horizons'. He mentioned the need for unity in our constant search for dollars. On 'Climate Service Partners and Emphasis' he offered that NOAA has to change too to consider its partners' needs, that NCDC will deal with large volume information to meet 'multi-user' needs rather than specific 'specialty users' needs, that RCCs are not there to support SCs but rather to provide a regional focus, and SCs will provide personal contacts to interact with policy and decision makers and will to some extent shape the client base. On 'Partnership Issues and Opportunities' he mentioned the Climate Data Modernization Project (CDMP) – all holdings will be on the web and the Integrated Surface Hourly (ISH) project as well as TD3206 efforts, and that SCOs had insufficient resources. On 'possible futures' he talked about efficiencies of common database and system structures, the movement of research results to service faster, the need to ensure baseline funding, personnel exchanges and joint research to be expanded to RCC hosting, and the need to keep a long view.

Dick Reinhart (WRCC) talked about 'Implementing the Partnership: the RCC perspective'. He started by outlining the need to assess user needs: e.g. legal issues – need to apply available information to specific questions, e.g. planning – delineate basic climate for specific activities, e.g. assessment – relate events to the past including the identification of analog years. He indicated that the need for timeliness via near-real-time data was growing, with increasing use of data for risk assessment that quality needs to be assured, additional breath in the form of additional parameters was desirable, and that 24/7 service was necessary. Under 'implications' barriers talked about the partners individually. For SCOs he mentioned increased involvement with the public and a barrier of limits in database management and applications which could be addressed starting with utilization of RCC net products – use NDDP. For RCCs he talked of acquiring data from more sources and a barrier of (mainly financial) resources which could be addressed by actually seeking more money. For the National scale he talked of increasing emphasis on database quality control and of a barrier of a lack of integrated systems for identifying, verifying, and processing corrections could be addressed by working more closely with states and regions. For all partners he highlighted increasing involvement with climate impacts at all scales and talked of overcoming the communication barrier with stakeholders.

Roger Pielke (CO) started by mentioning the significant step of using the ARSCO to self-certify. He talked about broad state-by-state viewpoints. He brought up an example that recent temperature anomalies were regional rather than global. He emphasized that climate is not just long-term averages - it is the descriptions of a physical system; the new SC for Montana, for example, is an ecologist. He went on to point out the strong need for SCs in Washington and West Virginia. He asked

that details about COOP observing sites be gathered including satellite imagery and on-site photos from at least the 4 cardinal directions because not all variations of the data are due to climate. He offered that the AASC can formulate policy statements and should send AASC representatives (e.g. O'Brien, Michaels) to address congress.

Much discussion ensued.

Jay Grymes (LA) asked what kind of policies direct customers to SC offices. Dick Reinhart replied that it is informal and based on RCC-SC dialog. Mike Helfert answered that there is a need to develop one-to-one links of SCs to the RCCs in order to understand the capabilities and services.

Sethu Raman (NC) asked about whether data to clients should come from SCs (otherwise a loss of income to SCs could occur). Mike Helfert indicated the need to cooperate. Roger indicated that some SCs want to refer to the RCCs as the provider.

Paul Knight (PA) on mesonets asked how do you handle quality and what about ownership. Roger Pielke answered that with a mixed bag of mesonets out there, a mixed ownership leads to some data being not available. Mike Helfert answered that proprietary data is a real problem and that NCDC is not set up to handle such restricted access. Wayne Foss(?) (NCDC) that many such issues currently exist and that NCDC does not archive such data now. Ken Hubbard (HPRCC) offered that discussions have occurred as a consortium of mesonets. (Here Bob Lefler joins the panel to represent the NWS.) Kevin Robbins (SRCC) indicated that the ownership issues can be handled. Data ownership by network is stored with the data. For example, one would use all data for map but a customer would only be allowed access for limited point specific data or would be charged on behalf of the owner. Lefler indicated that the NWS has met with AWS (Auto Weather Service – 'school network') which has 6000 stations. Exposure, calibration, and other issues exist. Those data are proprietary and will not be redistributed. He also cautions 'buyer beware' and asks 'is bad data maybe worse than no data?'. Andy Horvitz (NWS) points out security needs that may be met with mesonet data – wind data from mesonets could be useful – apparently Kelly has signed some sort of agreement. Don Jensen (UT) indicated that there are 28 networks in Utah and 30+ in the western states. He talked of a project to store hourly grids rather than raw data. Lefler indicated that NWS is trying to get out of climate data distribution by a policy rewrite. For example, ASOS preliminary data is not QCd and so NCDC should be used for distribution but NWS can't, for example, refer a customer to a private source, say, AccuWeather. Maury Roos (?) (CA) indicated that utilities release older data. John Christie (AL) asked "what are 'WSFO climate focal persons' really supposed to do? – are they 'assistant SCs'?" to which Bob Lefler replied 'that will be addressed tomorrow'. Kelly Redmond (WRCC) asked whether a national mesonet should be fostered not just for weather but for climate and what standards should it meet.

Jim Zandlo (MN) asked about the additional ARSCOs implied by the excess (50-55) mentioned in Leduc's presentation. Roger Pielke indicated that AASC should stick to the 'federal' model – one per state. Dick Reinhart suggested that perhaps SCOs could form or take on 'branch offices'. Mike Helfert explained the 50+ number was indicated to allow for Puerto Rico and small islands' offices.

Pat Michaels indicated that with tough budget times SCOs are losing funding with the possibility of some SC offices closing and asked how to defend the state role? Mike Helfert answered that offices must defend themselves but also AASC should be next in line to defend them but didn't know if a federal agency should defend them. Lefler indicated that federal agencies will also probably face significant cuts and so would likely not be of much help.

Pao-Shin Chu (?) (HI) asked how to improve the relationship of SCs to RCCs especially regarding travel and communications. Dick Reinhart suggested that virtual meetings could help. Mike Helfert countered that he was 'virtualed out' and that that method has its limits. Mark Shafer (OK) indicated that letters for ARSCO are useful for selling the program.

Pasteris (USDA, OR) indicated that SCs lend 'tons of expertise' to the Drought Monitor. A bit more discussion ensued.

A session on 'Issues for SC Offices' was started off with a few points from Mark Shafer (OK). Shafer started with needs for awareness and upgrading of office facilities. He listed the various administrative and academic initiatives, namely those from the NRC Board (BASC), NOAA's Climate Observations and Services (2001), and 2 American Meteorological Society initiatives. He indicated that the audiences are interested in the future of climate services. As for the AASC and climate services, he indicated a need for spelling out 'who are we?', 'how can we contribute?', and 'what do we need?' in a document about AASC. Some discussion about the connection of proposed legislation to existing AASC features ensued. Lefler suggested that identifying COOP station problems would be useful. Someone suggested 'show me the money'. Redmond suggested that 'front end' influence of legislative language steers money use better than 'back end' interpretation. Mark replied that it was too late (this time) for 'front end' influence. Michaels offered that title IX (of the energy bill) is having a tough time but the contents of it will reappear in next legislative iterations and we should lobby those future incarnations. O'Brien reminded everyone that AASC has a member ship in National Association of State Universities and Land-Grant Colleges (NASULGC, represents 180 universities) Oceans Board which writes to congress to recommend specific aspects of NOAA legislation. Guttmann (NCDC) emphasized that the drought has taken 5-7 years to get to this point. (???) offered that for the Energy bill, AASC should have involvement in the writing; it is very important for the AASC to have a consolidated, even strategic, plan for AASC to present for legislation. John Nielsen-

Gammon (TX) said that we need a plan/vision to add to awareness of other legislative efforts. Jan Curtis (WY) indicated that in a Wyoming water discussion a 'session on resolutions' was held to list one or two sentence statements that everybody can see and act upon. Basit (NCDC) indicated that the money is in satellites; they depend on calibration and validation and so present opportunities.

Roger Pielke introduced a series of talks on drought. He showed how vegetative health via satellite imagery could depict drought. He also showed some specifics of this year's precipitation at Fort Collins.

Connie Woodhouse (?) talked about paleodroughts; 'tree-Ring Reconstructions of Hydroclimatic Variability in Colorado'. Such information is useful for management purposes. In the study lower elevation trees were used to calibrate to modern measured stream flows. Lower elevation trees are more sensitive to precipitation than higher elevation trees which respond more to growing season temperature.

Pepe Salas (?) talked about 'Hydrologic Perspective on Droughts'. He mentioned several measures of drought but asked what makes a river/water drought. He talked about forming a multivariate stochastic model for multiple rivers in Colorado to answer how the water systems hold up under various drought scenarios. He showed the development of return periods as 'waits' until events of a chosen measure would occur. The 'risk' of such an event is estimated.

Jay Larimore (NCDC) spoke on 'Drought Monitoring at NCDC'. He talked about dataset development as filling the need for historical perspective. The state-of-the-climate, started in 1998, is assessed near-real-time for recent months. Various nationwide perspectives are formed with most offered in web-based format and including, for example, time series of well levels. Communications are made, including press releases. The Crop Moisture Stress Index (for corn and soybeans) is one specialized indicator. Global and North American (whole continent) drought monitoring are also offered.

John Christie (AL) talked about 'Alabama Drought Information'. He indicated that drought is in the eye of the beholder' Alabama uses 4 indices: 'lawn and garden', 'agriculture', 'river/reservoir', and 'water table'. All may have differing responses by state. All have different time scales. For lawns the measure is reported as 'inches of deficit'. For agriculture, CMI and PDSI are used (for now). For rivers a map of flows by gage, as produced by USGS, is used. For water table there was not example (currently have just one real-time gage). In a short discussion Ned Guttmann pointed out that there is a disconnect between what locals need versus what feds supply. John replied that we do what we need to do to steer decisions. O'Brien asked about the means of developing a wildfire index. John replied that we (AL) have none but could.

Mark Svoboda (Drought Monitor) talked about the 'U.S. Drought Monitor – Where are we going? What's New?'. He started by pointing our that several preexisting indicators had no integration. Many partners, including CDC, NCDC, RCCs, and SCs, work on the Monitor. New techniques depict drought intensity by ranks. Many products are considered along with seasonality and regional issues. The use of real-time COOP daily values as input, including integrated daily precipitation and

mesonet data, is new. The process cycle includes a preliminary review by local experts and is followed by final comments by local reviewers on Wednesday just prior to release. Differing needs require different 'blends' of source information; in any given indicator drought can be at many different stages. Operationally individual parameters are expressed as ranks and then weighted into a blend. The 'unified' blend combines short and long term blends (look for more new blends soon). Plans are to incorporate more USGS ground water data as it becomes available. In discussions, Michaels indicated that although 40% of the country is in drought the economic impact (apparently) is not as bad (by economic indicators) as, say, as in 1930s or 50s – maybe climatologists have done their job of drought awareness and the economy did adapt.

Greg Suhler talked about forecasting drought and what's coming up. He showed country-wide maps of predicted conditions. When asked about his methods he indicated that they were proprietary.

Klaus Wolters (?) talked about 'Diagnosing and Predicting Drought with Climate Divisions: Can We Do Better?'. He pointed out that local detail in, say, precipitation is very fine when compared to climate division size. Colorado, for instance, has only 5 very large divisions. He asks if divisions could be better defined. He reclustered data by 3 different techniques. In his clustering he threw out stations with very poor correlations (such stations depict very local effects). He used rotated principal component analysis with the second rather than the usual first moments.

Alan Basit (NCDC) talked about satellite microwave data to assess surface wetness, temperature, shallow soil moisture, and snowcover. 15 years of MSU (microwave sounder unit) data at 30km resolution are available. Products must be standardized via a gamma distribution. Resulting patterns show much detail (given 30Km resolution) and are not blobby (like info analyzed from sparse point data). See online recent conditions at www.ncdc.noaa.gov/ssmi.html. There are plans to make weekly and monthly data available online.

Jan Curtis (WY) talked about 'drought triggers' to steer action in Wyoming. Subjective and objective measures as triggers include the following successive assessments: on Oct 1 (start at beginning of hydro year) with question about adequacy of stored water supply, then decide successively whether to continue based on April 1 snowpack, April-May-June precipitation, May 1 soil moisture, etc. These results were combined into colorful nomograms.
See www.wrds.uwyo.edu/wrds/wsc/drought_triggers/drought_triggers.html
In a follow-up discussion, George Taylor (OR) asked where Jan gets percent of normal precipitation and divisional data. To which Jan replied that statewide data is used for now and percentages come from CPC percentile measurements converted to percentages of normal. Bob Lefler (NWS) asked whether the information was used by planners for growth. Jan replied that they are only used for water restrictions for the current conditions.

Chris Davey (CO) talked about the 'Representativeness of Climate Observing Sites' or 'Environmental Exposures of Surface-based Weather Stations'. He surveyed eastern Colorado sites and took photos of views of sites in 4 cardinal directions around the air temperature equipment. Landuse, etc. was also documented. Thought sites are commonly over irrigated lawn, asphalt and concrete sites were also found. Many temperature shelters were located close to a house for wiring purposes. He showed pictures of examples of undesirable conditions: instruments overgrown with vegetation, 5 feet from a building wall with radio tower above and asphalt or concrete in all directions while described as 'rolling farmland', exhaust vents very closeby, and concrete slabs. He emphasized the need for good metadata. He pointed out that even HCN (historical climate network) sites may nor adhere to exposure standards. Bob Lefler (NWS) indicated that 4 or 8 digital pictures for each site were planned.

End of presentations for Day 1.

At the evening banquet Steve Doty was presented a certificate of recognition for his work in coordinating the work of state, regional, and national partners.

The banquet speaker was Shawn McGrath of the Western Governor's Association which represents 18 states. In Denver he is (?) the program manager for water programs. Shawn indicated that the governors asked what constitutes effective management and avoids enhancing polar extremes. Several names were suggested but 'enlibre' (?), meaning to 'to enable', was chosen a name for the principles for getting at such solutions. Significant drought in the southwest brought that topic to the association. The governors created a report that indicated that there was a lack of federal policy and no lead federal agency. Further, funding was mixed and difficult and the focus was on response. Monitoring was not reliable, integrated, nor local in focus. The association decided to create a coordination body which led to the 'Drought Monitor'. Efforts have been made to catalog programs. Attempts have been made to create national policy via legislation. The resultant bill is being considered now. That bill includes a national policy, a national drought council which will be a kind of FEMA for drought and provide 'drought preparedness', a national drought fund to implement plans, and a national drought monitoring network authorized to gather key indicators and make forecasts and assessments.

The morning of the second day focused on NCDC programs.

(During the day the current status of Dwight Pollard, SC Alaska, was announced as unchanged. A card was passes around for all to sign.)

Mark Eakin (NCDC, PaleoClimatology Branch, World Data Center for PaleoClimatology, Bolder, CO) talked about 'What are paleorecords?'. The PaleoClimatology Branch is a new addition to NCDC and will remain located at its old home with the NGDC. Paleorecords are climate and environment measures derived from natural occurrences. Various products online include for example 'state-of-the-climate', slide sets, and a climate time line. See www.ngdc.noaa.gov/paleo.

Ned Guttmann (NCDC) talked about 'Data Integration and Quality Assurance'. He is merging data from multiple sources into one set. He will 'fix' data only when certain of the goodness of the replacement. He has merged about a billion 3200 records. Non-weather checks of the data have begun. He is looking for advice on date shifting problems (no substitute for raw data forms). The 'data rescue' 3206 set has non-standard elements. Non-weather problems include mis-identified station numbers, wrong codes, etc. For weather QC, he wants a comprehensive suite of tests. He will use SNOTEL, HCN, Climate Record Books, and fort data for the 3200. Other data will be considered if digital and metadata are provided. He intends to partner NCDC with RCCs and SCs. He wants to know if values have been checked as part of metadata (to avoid unnecessary rechecking).

Neal Lott (NCDC) talked about 'Integrated Surface Hourly (ISH) Database Global'. He stated that various datasets vary in format, station numbering systems, etc. The resultant assembly of QCd data will become available on CDROMs. The final set will include 3280, U.S. Surface Hourly, Air Force surface hourly, and the Hourly Precipitation Data (HPD, 3240). The full period of digital record will be included. Since the data set will be global, GMT was chosen as a universal time over LST. Metadata started with 3 different station numbering systems. An online implementation will be produced. The whole archive is 300 Gb. CDMP hourly will be added to ISH. He welcomes partners who can contribute U.S. data sources.

Tom Peterson (NCDC) talked about the 'Network Performance Indicator (NPI) Project'. The project forms real-time indicators on the health and behaviour of various networks. Observing system managers and others will find the results useful. Indicators currently reported for COOP stations include data missing, completeness, and QA. The project will also create real-time homogeneity results. A mapping option will become available to query indicator info.

William Brown (NCDC) talked about 'Updating CLIM-60 Chapters (Climates of the States)'. He indicated that the narratives (about 8 pages) need partners' work –

it's a chance to play 'chamber of commerce'. Overall the publication is about 20 pages and includes summary tabular data. Both web and CDROM versions are planned. Updates to narratives are requested by Jan. 15, 2003 and can be sent to william.brown@noaa.gov. In a short discussion, Bob Lefler indicated that WFSOs are willing to help update but won't get in the way of the work that SCs offer.

Matt Menne (NCDC) talked about 'ASOS and the 1971-2000 Monthly Normals'. (Matt's talk was given in two parts in different venues due to a power outage in the Renaissance Hotel.) He mentioned that with ASOS becoming part of the record late in the 1970-2000 period, that strong limitations exist in standard inhomogeneity testing but asks whether impacts can be estimated anyway. A single January record for Chicago was used to clearly demonstrate deficiencies of ASOS precipitation relative to nearby stations when temperatures were below 32. Similarly, Colorado results indicate that heated tipping buckets values will compare favorably when temperature is greater that 32 but the undercatch grows as the temperature falls. First order stations can and have substituted data from a variety of nearby stations as deemed warranted. ASOS precipitation normals end up being temperature dependant. (power goes out …) Adjustments, per se, would not be practical for the frozen period. As a first attempt, values for all ASOS stations were estimated from surrounding COOP stations for any month with below freezing temperatures. But many such estimates matched well to original ASOS observations – so QC procedures were used to keep or reject the observation itself before an estimate was substituted. A test involving the maximum value of a statistic on the difference of a station and a nearby reference set was used to find the date of a station change. If that date matched the ASOS deployment data, differences from the reference changed at the station after ASOS deployment. It was decided not to adjust the precipitation values to match current ASOS behaviour.

(The mid-morning power outage brought the entire crowd out into the Renaissance's west plaza. There with the cicadas singing, birds flitting, and a benign NC summer sky, truths about climate were taught from pedestal-like perches - a rather sketchy rendition follows …)

Tom Karl (NCDC Director) talked about the need to define common projects. Such specifics would help in the search for funds. He suggested that a better understanding of HCN site and environment changes would be a good common goal. He also suggested that common projects could consider the use of the large and growing radar database. In the discussion that followed other suggestions included a combined paleo-instrumental analysis. Geoff Bonnin suggested that we should find ways to absorb and use data from other producers/agencies. Our own networks are only a small percentage of what's out there. But Kelly Redmond responded that other mesonets will not have climate as a mission. Angel (IL) suggested that real-time assessments of vector-based threats such as the Nile virus could be made. Richard Helm welcomed drought information from the states. It

was also suggested that pre-instrument climate information could be gathered by the states.

The afternoon of the second day focused on Federal programs.

(The afternoon session resumed in the bar annex at the Best Western across the street. Matt Menne completed his talk – as outlined above – and many of the scheduled speakers were accommodated.)

John Jensen (NCDC) talked about 'U.S. Climate Network (CRN) – A Climate Driven Network'. He indicated that the project is driven by uncertainty in existing data systems. It was designed as a climate monitoring network. Long-term stability is required while performance is monitored hourly. Basic parameters are temperature and precipitation but supporting information such as wind (speed only), surface temperature, global solar radiation, relative humidity, soil moisture and temperature may be observed. Vibrating-wire precipitation gages are deployed within Alter shields. Extensive partnerships exist. Not all sites will have paired sensors (looks like about 1 in 3?). RH and soil sensors will be evaluated in 2003. A maintenance plan will also be developed soon. Transfer functions (from old sensors to new) will be developed. A 'secondary' (?) precipitation gage will be tested. He is looking for correlation-distance studies in neighborhoods of CRN stations.

John Bates (NCDC, Remote Sensing and Applications Division) talked about an 'Overview of NOAA's Scientific Data Stewardship'. Stewardship teams feedback to observations and metadata thus providing a rapid method to address problems in the data systems. Access to the databases must be provided to participants. The Comprehensive Large Array – data Stewardship System (CLASS) will be the mechanism for access by participants (SCs, etc.).

Dave Goodrich (NOAA Climate Observations and Services Program) talked about 'Climate and Climate Services - A NOAA Perspective'. Various products depicting climate and climate change were shown; for example, analyses of carbon sinks. SC/RCC roles include data service and explanation, local expertise, data integration, education/outreach, and guidance on NOAA observing systems such as the COOP networks. He suggested a 'climate extension' could be formed with additional partners involving Regional Integrated Sciences and Assessments (RISA), Ag Extension, Sea Grant, and others.

Fiona Horsfall (NWS, Climate Services) gave an overview of the Climate Services Division. The Division does climate analysis and prediction on a national, not regional, scale. Customer outreach workshops are held to evaluate products. A COOP Modernization Partners Forum will be held Sept. 18. Snow boards will be purchased for COOP observers. Field office personnel will be trained to talk about national, not regional, climate issues. A 'Climate Reference Book' is being established. Partnership Program Participants were listed. A Vision for Decision Support will include a 'pilot state climate extension program' which will tap

local/regional expertise, data integration at a local level, etc. They plan to solicit projects. A climate Prediction Workshop will be held in Oct.

Geoff Bonnin (NWS, Office of Hydrologic Development) talked about 'Updating NOAA Rainfall Frequency Atlases'. Updates in the east and western U.S. are currently underway. Regional L-moment analyses are done with uncertainty assessments (Monte Carlo). Statistical estimates are at points which are spread into space using PRISM with a 'predictor' of mean annual precipitation. Have recently added pre-1949 (3206) and post-1994 data to the analysis. Most of the southwest processing steps including reviews and checks for climate change are done. Results are presented in web formats including printable pdf documents. They are ready to do the rest of the country but do not have a direct budget. They have been working on a reimbursement basis and currently no new money is coming in.

Andy Horvitz (NWS, Office of Climate, Water, and Weather Services) talked about 'COOP Program Modernization'. They want to improve drought and climate monitoring as well as snow, flood, etc. Daily snow measurements are to be extended to 6000 sites. Real-time data availability will be improved. Hourly temperature and precipitation will have real-time QC as received. Improved flood forecasts are expected by the reduction of error bounds. Temperature forecast improvements are expected. A spatial study will guide the choice of temperature and precipitation locations to modernize. Observers will still be required to do things like empty the rain gage. RCCs have list of sites proposed (2/county) – existing will be used but recruitment will be done as needed. On rescue matters: 24 Fischer-Porter replacement prototypes will be deployed this year. 2400 need replacement ultimately. 300 more will be replaced in '03. 5000 MMTS with 35-day memories will be purchased in '02. HCN sites will keep original thermometers. A demo program in the northeast U.S. has over 100 temperature stations coming hourly via phone lines. The data are used to estimate energy usage and estimate air quality changes. It will take 9 years to implement the 20x20 grid of observations. Snowboards of expanded PVC will be bought. The new snow video will be distributed. The 'IA' snow sticks will be used.

Phil Pasteris (USDA/NRCS/WCC) talked about 'USDA Climate Services and Needs'. He talked about a process for participants to decide needs. Data sets and products were described. Much use of the data is now in a GIS environment. They need and maintain many interactive internet products. They develop products before they are needed in a crisis. In a short discussion, John Christie asked how the USDA uses upper air data. Phil responded that he was not sure (ask Ray Motha) but went on to offer that the info will probably be needed for dispersion assessments.

An open discussion ensued.

Mike Palecki (MCC) asked if a redesign of climate divisions countrywide could/should be done. To which (Wolters ?) replied 'don't know yet'.

Harry Hillaker (IA) asked who will do Modernized COOP maintenance? Will they be experienced? Trained? Andy Horvitz responded that contractors will install. Downed equipment will be repaired within 72 hours. (AK contingent ?) commented that with increased data coming in, the workload of the field offices will increase. (couldn't hear Bob Lefler comments).

Jim Angel (IL) told of a yellowed MMTS that was replaced and yields .7 degrees cooler readings. He wonders what is being done to ensure against such discontinuities.

Paul Knight asked about the availability of the snow videos. Andy Horvitz indicated that they will be distributed.

John Christie asked 'What IS a snow board?'. Andy Horvitz answered: a 16"x24" white expanded PVC board used as a surface to collect falling snow.

A discussion about terms of the partnerships ensued and became somewhat contentious at times. It was pointed out that stature, visibility, and the 'local point of focus' are all important to SCs and that the RCCs should defer.

(The now open bar was producing quite a bit of competing noise.)

End of presentations for Day 2.

Two buses ferried meeting participants and others to a dinner outing at Claxton Farms. The paid entertainment was supplemented with the 'el-nino' song and a sort- of climatologists lament (written by Matt Menne) performed by George Taylor self-accompanied by a guitar borrowed from the band. Also heard thereabouts was a classic ditty with realistic scowls performed by (sounds Irish to me) O'Brien.

The morning of the third day did not have a focus.

Steve Doty (NCDC) talked about 'Climate Data Modernization'. He said that 35 million records are now online and include COOP, SA, climate record books, and many other things. Fort data scans are not digitized but should be online.

Greg Zelinski (ME) talked about a '19th Century Climate Catalog'. The resources gathered together include instrumental and anecdotal information. See the web facility at www.umaine.edu/oldweather/. Work needs to be done to blend the old with the modern record and must consider time-of-observation, thermometer exposure, and other metadata.

Sethu Raman (NC) talked about 'ARSCO of NC Report: A success Story?'. The full name, changed in recent years, is 'Public Service Center for Climate-Environment Interactions' The SC position is appointed by the president of the UNC system. Currently up to 6 positions are supported with about $400k of mixed permanent and soft funding. They charge only about 30% of clients, mostly private sector. They cooperate closely the local NWS. They have upgraded mesostations to international standards and are aiming to bring density to 1 station per county for 100 stations total. They now have 25+ (1976-2001) years of service.

The Business meeting was convened.

Glen Conner (KY) was applauded for his career and status as professor emeritus.

George Taylor reported on a survey of 28 SCs that he had undertaken during the meeting. The counts in various budget categories were found to be: 3 in 0-$25k, 3 in $25-50k, 8 in $50-100k, 7 in $100-200k, 4 in $200-300k, and the remainder with more than $300k. He indicated that currently there seemed to be fewer in the lowest categories based on information he had gathered in past years. But, a caution was made: state budgets are being cut everywhere so even these relatively good results may worsen and the numbers in the lowest categories could grow again. O'Brien added that you shouldn't wait for the ax-man to visit you – go to your administration and make your program look good – give them ownership.

Jim Angel reported that (together with Mark Shafer, Don Jensen, Pasteris, and others?) documents will be developed to put AASC's 'foot-in-the-door' in legislative discussions on services. We need to expound on 'what are we?' and 'what do we need?'. The effort may help with current legislation or lead to future legislation. On 'data quality and services' we must seek support or new aspects as well as continuity within existing systems. On 'climate services' we must interact with other players, e.g. RISAs. On 'climate data systems' we must encourage the deployment of CRN, use of mesonets, and integration of resources. In discussion that followed, Kelly Redmond started by asking what products would be made. Angel suggested an expanded brochure, e.g. a 4 page general description and another document designed to inform legislators would be produced. Helfert suggested that a separate list-serve to work on the project would be appropriate – email basics would be available 'next week' – he would try to help somehow.

Jay Grymes made a quick survey of lengths-of-service as SC : a large majority were 15 years or less and Pat Michaels came in longest (of those present) with more than 20 years. The point was that the AASC is becoming younger.

Roger Pielke and Jay Grymes will try to get a general statement on the needs for drought information to Schawn McGrath as comments on the drought bill.

(??? some discussion missed)

How to remove an ARSCO was discussed. An ARSCO has one year to reach ARSCO standards before the designation could be removed. Non-ARSCOs are unaffected by anything AASC can do.

That the past-president will review ARSCO applications and annual reports was suggested. It was passed by a voice vote.

Associate members were nominated. All nominations were accepted by a voice vote.

A membership discussion was held. A student membership was suggested and briefly discussed. Jim Zandlo suggested that a 'service membership' to identify members who go beyond simple associate bounds and perform many of the same functions of an SC (but cannot BE the SC because the position is held by someone else) would lend stature to the individual as well as benefit AASC. Those members could be candidates for ARSCO should the need arise. They could function as 'branch offices' of the ARSCO if internal agreements within the state could be reached. The matter was referred to membership committee chair O'Brien for further action. The suggestion should be distributed to the membership via email for voting ultimately. Jay Grymes brought up a need to increase dues to support increasing presidential travel costs. The treasurer, David Stookesbury (GA) was then called upon to make a report to demonstrate the current state of the budget. Others bought up the need for the executive committee to actually establish a formal budget. The executive committee was also called upon to suggest a dues level change. Both suggestions were affirmed by yes voice votes.

A proposal was made to add the NWS formally to the partnership list; i.e. add NWS to SC-RCC-NCDC. We are formally partners with NCDC. Older 'white papers' attempted to describe ARSCO-like relationships. John Young (WI) pointed out that partnerships need to be more spelled out. A (reworked) motion was made that the executive committee would work with the NWS to develop a framework for partnership.

David Stookesbury, after noting that there really isn't a place for 'applied climatology' versus 'modeled climatology' anymore, suggested that the AASC should host an e-Journal for a 'Journal of Applied and Service Climatology'. Page charges could be perhaps just half of what AMS charges and could still produce an income for the AASC. It would be refereed and publication would happen quickly after article approval. A need was identified for the definition of scope, papers type, etc. A short discussion of the visibility for the AASC ensued. A committee was formed (Raman, Jensen, Knapp, Stookesbury) to work out details.

Jay Grymes (now past-president) introduced the new president Roger Pielke. Roger pointed out that the Presidential Climate Plan Meeting was to be here (Asheville?) in Dec. He urged everyone to photograph COOP, especially HCN, sites from the cardinal directions. He mentioned the value of the U.S. National Assessment statement for the AASC that was being prepared.

On new officers: **David Stookesbury** was 'continued' for a (unprecedented) 3rd year as **secretary-treasurer**.

A single candidate was suggested for **president elect**: **David Robinson (NJ)**.

Both **Puerto Rico** and **Oregon** were suggested as sites for the **2003 meeting**. Both will prepared proposals to be posted no later than Sept. 15 for consideration by the members. Voting for the next meeting site will take place by Oct. 1.

Ithaca, NY and Hawaii were both offered as sites for the 2004 meeting.

By previous discussion (at an AMS meeting), it has apparently been decided that the 2005 meeting of the AASC will be held in conjunction with the June 2005 AMS meeting of 'Applied Climatology' in Savanna, GA. (No official vote was taken on this matter?)